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*A FEW
ASTRONOMICAL
INSTRUMENTS*



From the works of
WARNER & SWASEY,
CLEVELAND, OHIO, U. S. A.
M D C C C C



THE WORKS OF
WARNER & SWASEY

Introduction

THE number of leading observatories for which we have designed and made astronomical instruments affords us an opportunity to bring together a series of illustrations which we feel will not only be of general interest, but also of service in showing the magnitude and completeness of modern astronomical equipment.

We feel that the illustrations speak for themselves, and it has therefore seemed to us that a mere mention of some of the instruments and observatories would be even preferable to elaborate description.

The objectives of the three largest telescopes, those of the Yerkes, Lick and Naval Observatories, were made by Messrs. Alvan Clark & Sons, while the objectives, and, in fact, all the optical parts for the other instruments shown, are from the works of Mr. J. A. Brashear.

We are glad to acknowledge our indebtedness to the astronomers of the several observatories for their courtesy in supplying certain of the photographs here reproduced.

WORCESTER R. WARNER

AMBROSE SWASEY



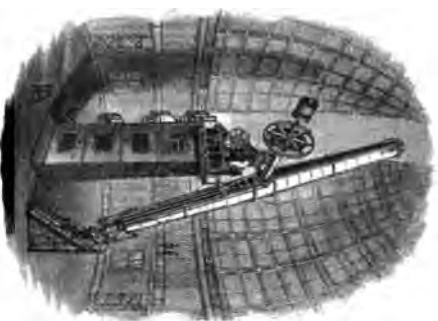
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W.R. WARNER.
CLEVELAND, OHIO, U.S.A. June 18, 1901

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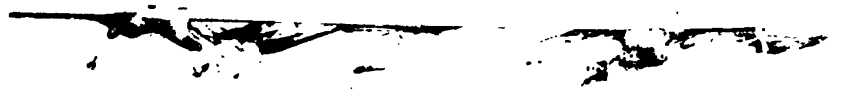
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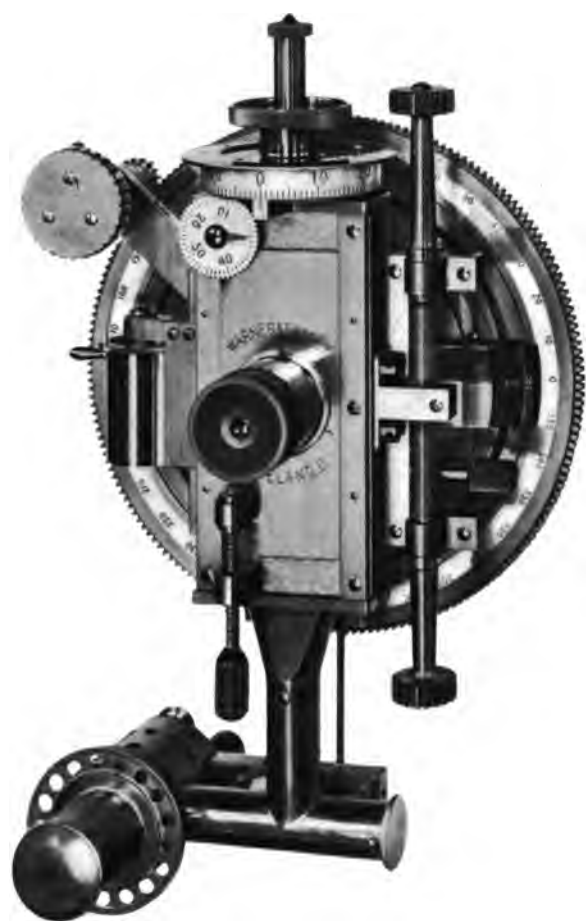
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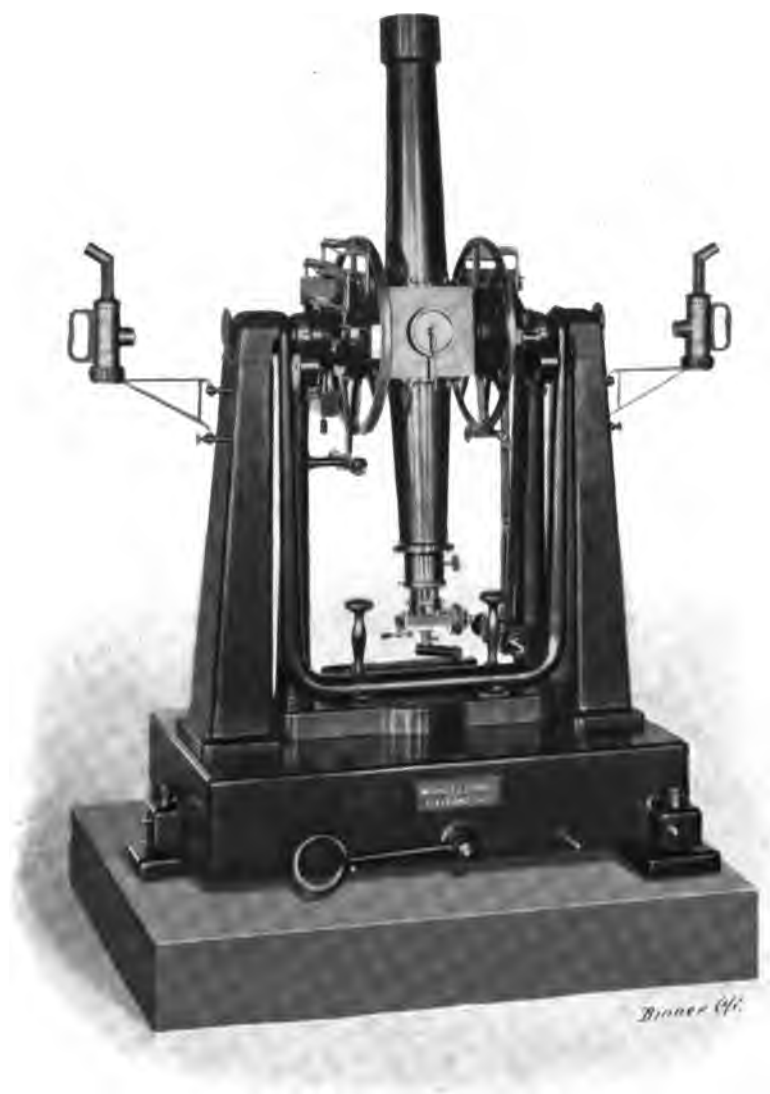
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STANDARD CHRONOGRAPH

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3-INCH COMBINED TRANSIT AND ZENITH TELESCOPE
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4-INCH ZENITH TELESCOPE FOR THE
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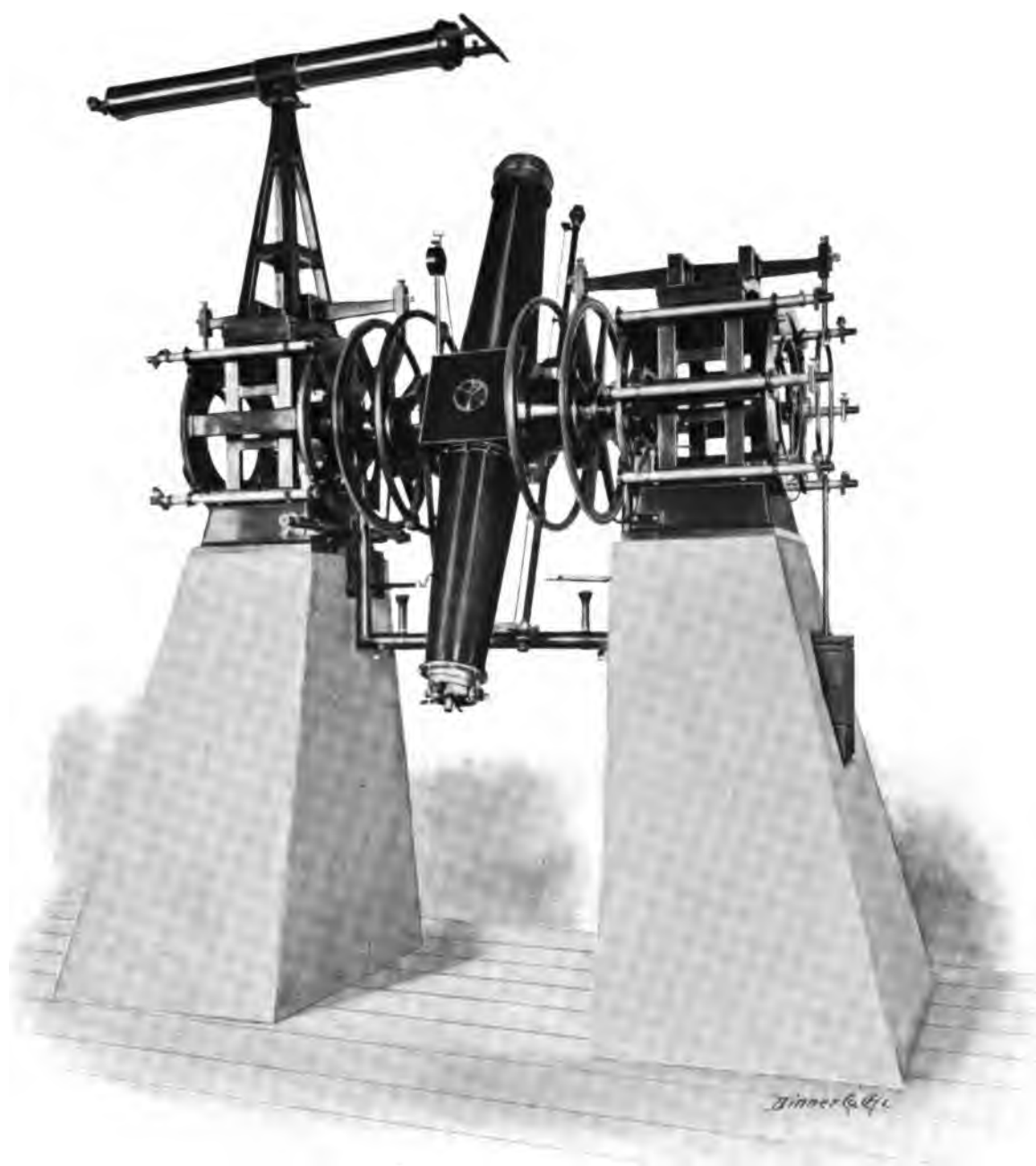
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5-INCH ALT-AZIMUTH FOR THE U. S. NAVAL
OBSERVATORY

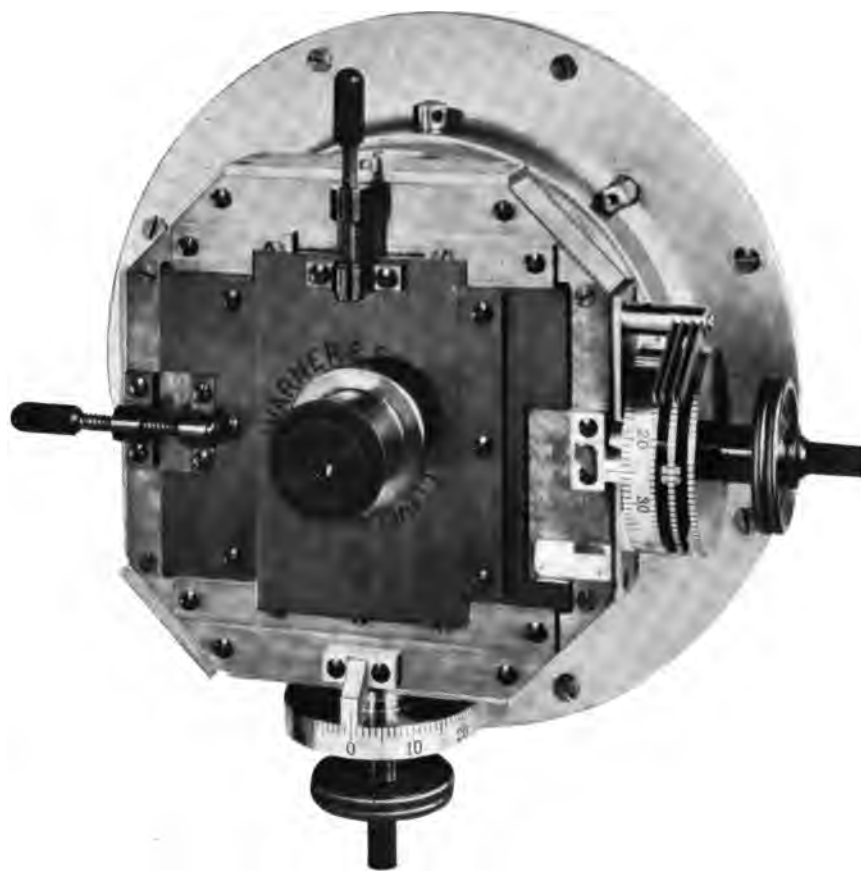
Plate X

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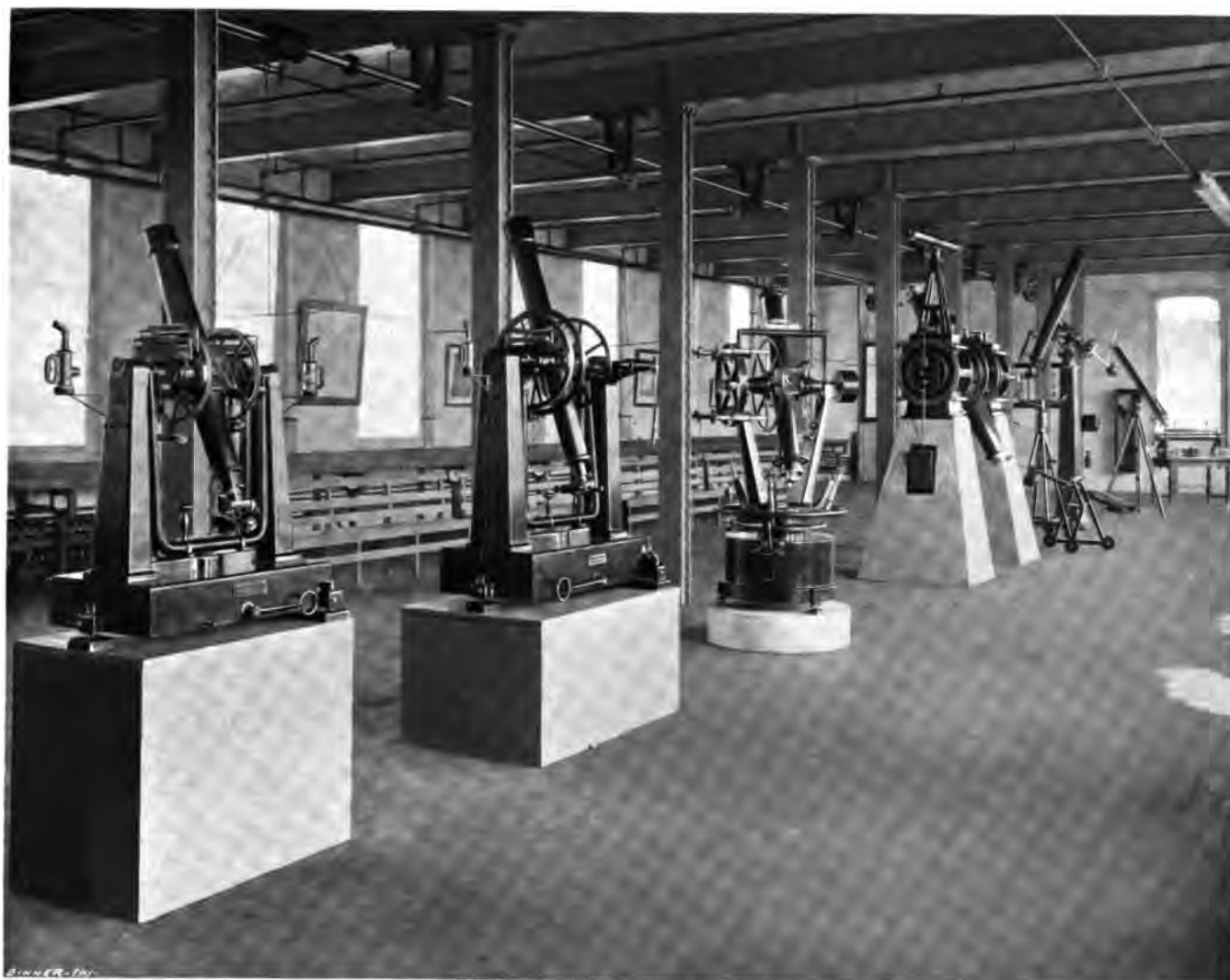
6-INCH STEEL MERIDIAN CIRCLE FOR THE
U. S. NAVAL OBSERVATORY

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STEEL MICROMETER FOR THE 6-INCH MERIDIAN CIRCLE
OF THE U. S. NAVAL OBSERVATORY

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SOME ASTRONOMICAL INSTRUMENTS MADE FOR THE U. S. NAVAL
OBSERVATORY, UNIVERSITY OF PENNSYLVANIA
AND OTHERS

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40-INCH AUTOMATIC GRADUATING ENGINE
MADE AND IN USE

AT THE WORKS OF
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A. W. FULLER
ARCHITECT

DUDLEY OBSERVATORY, ALBANY, NEW YORK

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FROM THE WORKS OF
WARNER & SWASEY



OBSERVATORY OF THE SYRIAN PROTESTANT COLLEGE
BEIRUT, SYRIA

12-INCH TELESCOPE

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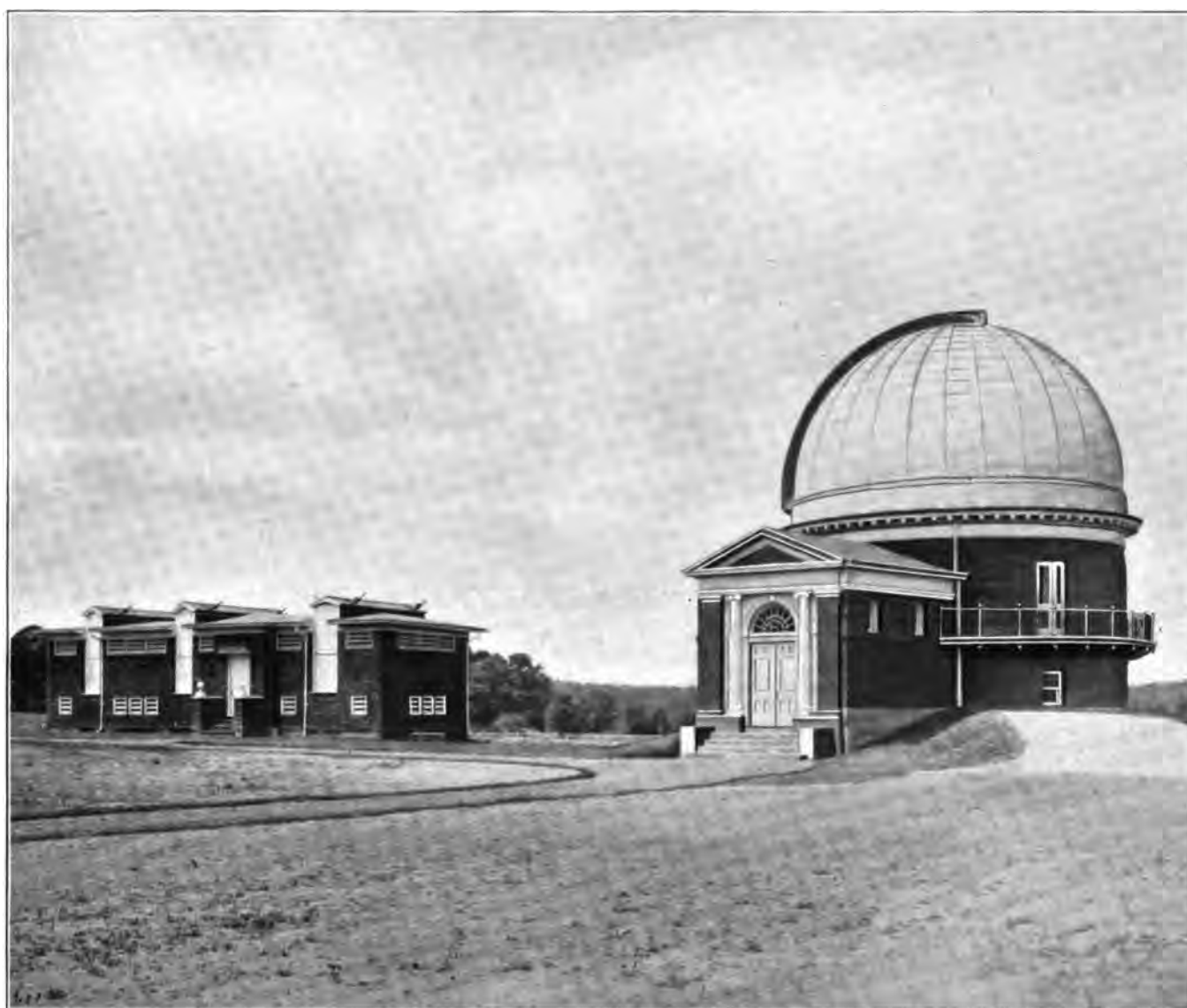


J. W. STEVENS
ARCHITECT

THE GOODSELL OBSERVATORY, CARLETON COLLEGE
NORTHFIELD, MINNESOTA

16-INCH TELESCOPE, AND
17 AND 30-FOOT DOMES

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EDGAR V. SEELER
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THE FLOWER OBSERVATORY, UNIVERSITY OF PENNSYLVANIA
PHILADELPHIA, PENNSYLVANIA

30-FOOT DOME
18-INCH TELESCOPE
4-INCH MERIDIAN CIRCLE
4-INCH ZENITH TELESCOPE
3-INCH UNIVERSAL PRISM TRANSIT

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R. M. HUNT
ARCHITECT

U. S. NAVAL OBSERVATORY, WASHINGTON, D. C.

26-INCH TELESCOPE
45 AND 26-FOOT DOMES
6-INCH STEEL MERIDIAN CIRCLE
5-INCH ALT-AZIMUTH, ETC.

FROM THE WORKS OF
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R. M. HUNT
ARCHITECT

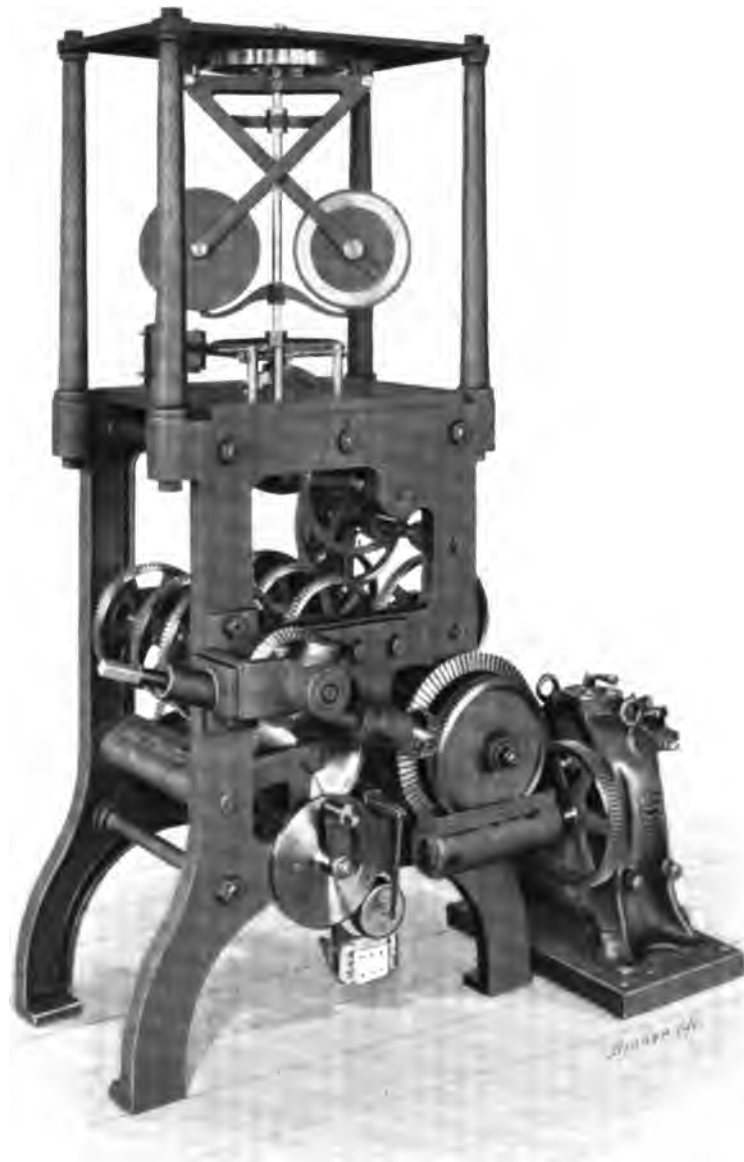
THE U. S. NAVAL OBSERVATORY BUILDING IN WHICH THE
26-INCH EQUATORIAL IS MOUNTED. TELESCOPE,
ELEVATING FLOOR, AND DOME

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26-INCH TELESCOPE OF THE U. S. NAVAL OBSERVATORY

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DRIVING CLOCK OF THE 26-INCH TELESCOPE OF THE
U. S. NAVAL OBSERVATORY

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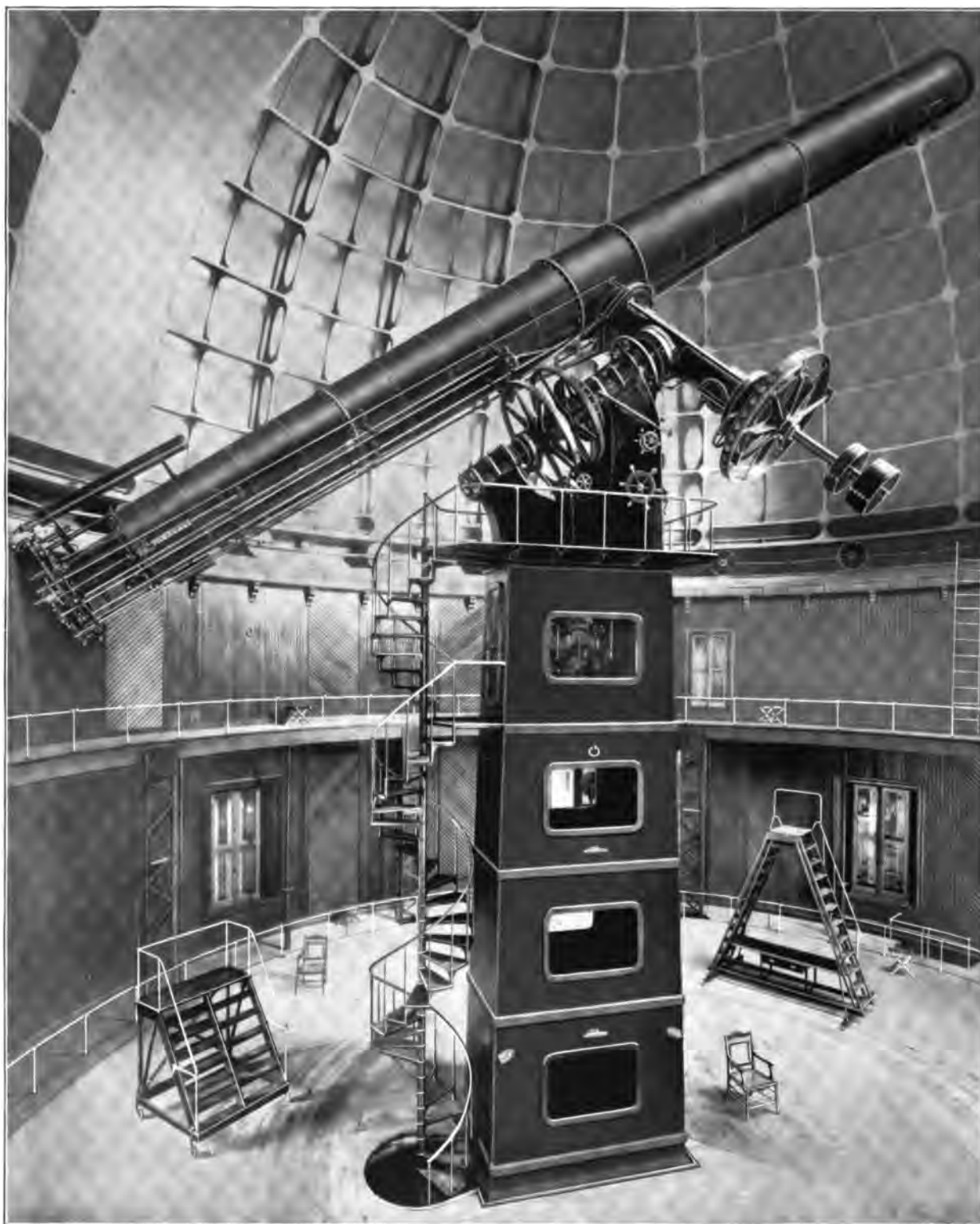
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ARCHITECTS

THE LICK OBSERVATORY, UNIVERSITY OF CALIFORNIA
MOUNT HAMILTON, CALIFORNIA

36-INCH TELESCOPE

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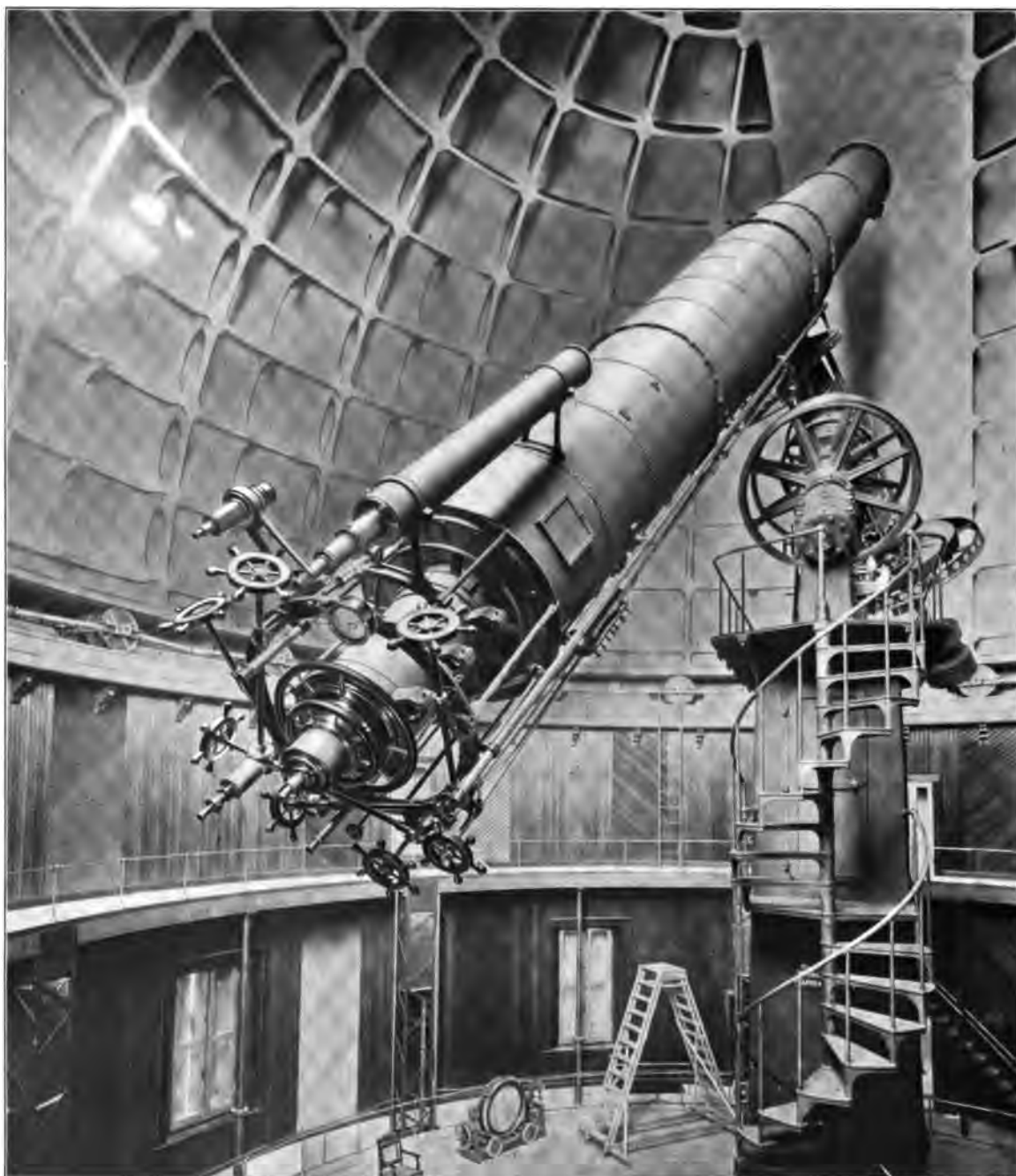
Plate XXIV



36-INCH LICK TELESCOPE

Plate XXV

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36-INCH LICK TELESCOPE

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EYE END OF THE 36-INCH LICK TELESCOPE

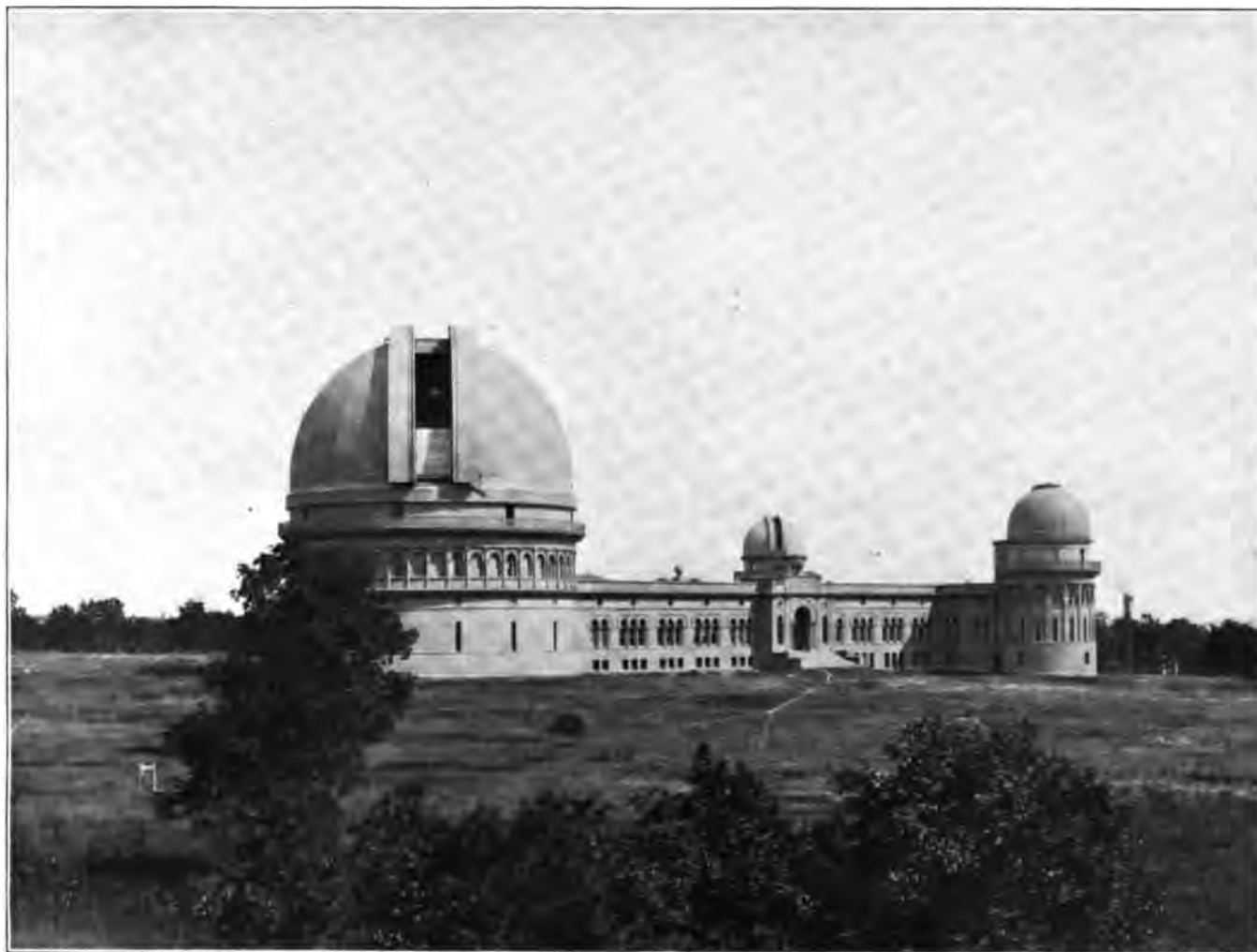
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THE LICK OBSERVATORY IN WINTER

36-INCH TELESCOPE

FROM THE WORKS OF
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HENRY IVES COBB
ARCHITECT

THE YERKES OBSERVATORY, UNIVERSITY OF CHICAGO
WILLIAMS BAY, WISCONSIN

40-INCH AND 12-INCH TELESCOPES
75-FOOT ELEVATING FLOOR
90, 30 AND 26-FOOT DOMES

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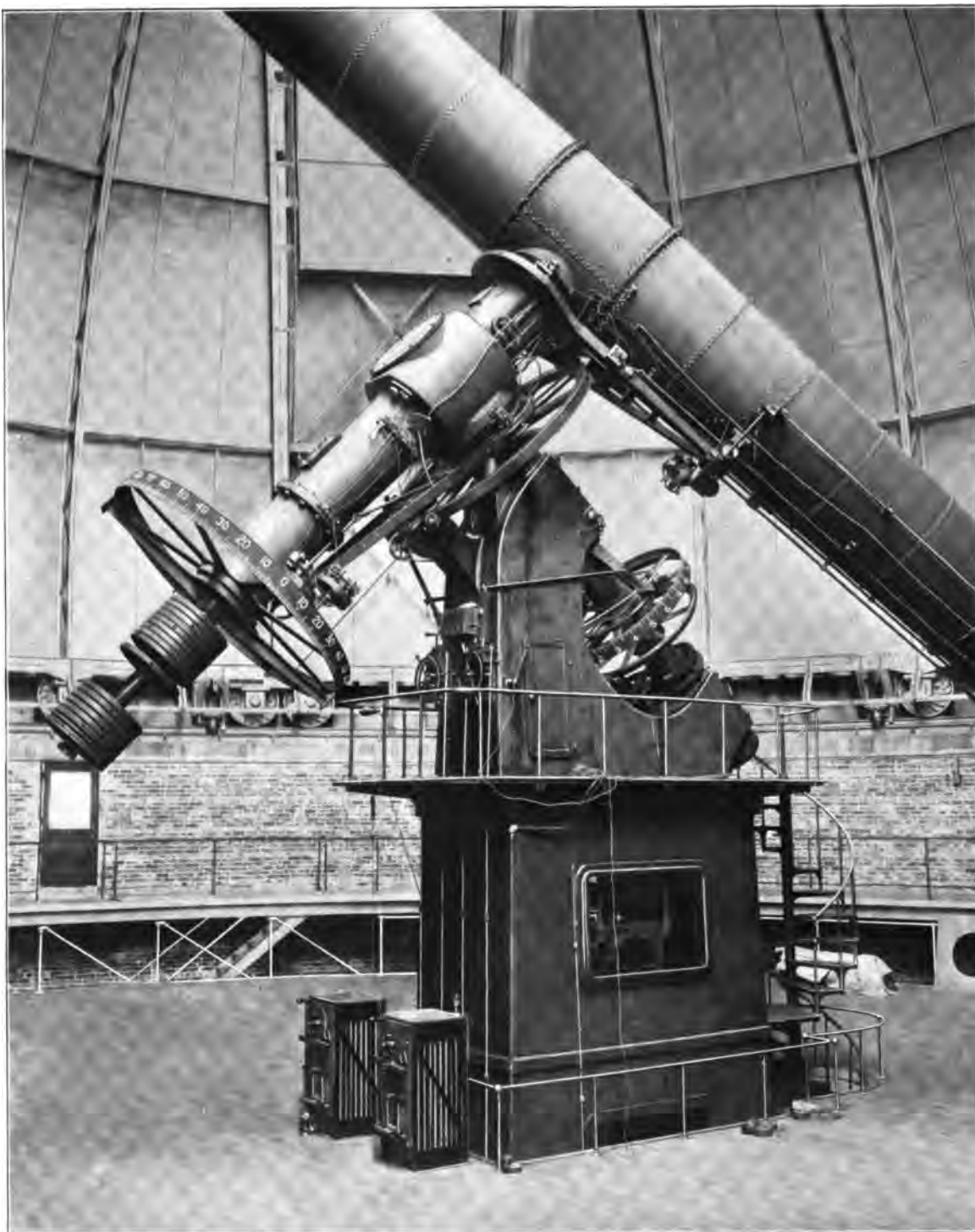
40-INCH TELESCOPE OF THE YERKES OBSERVATORY

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EYE END OF THE 40-INCH YERKES TELESCOPE

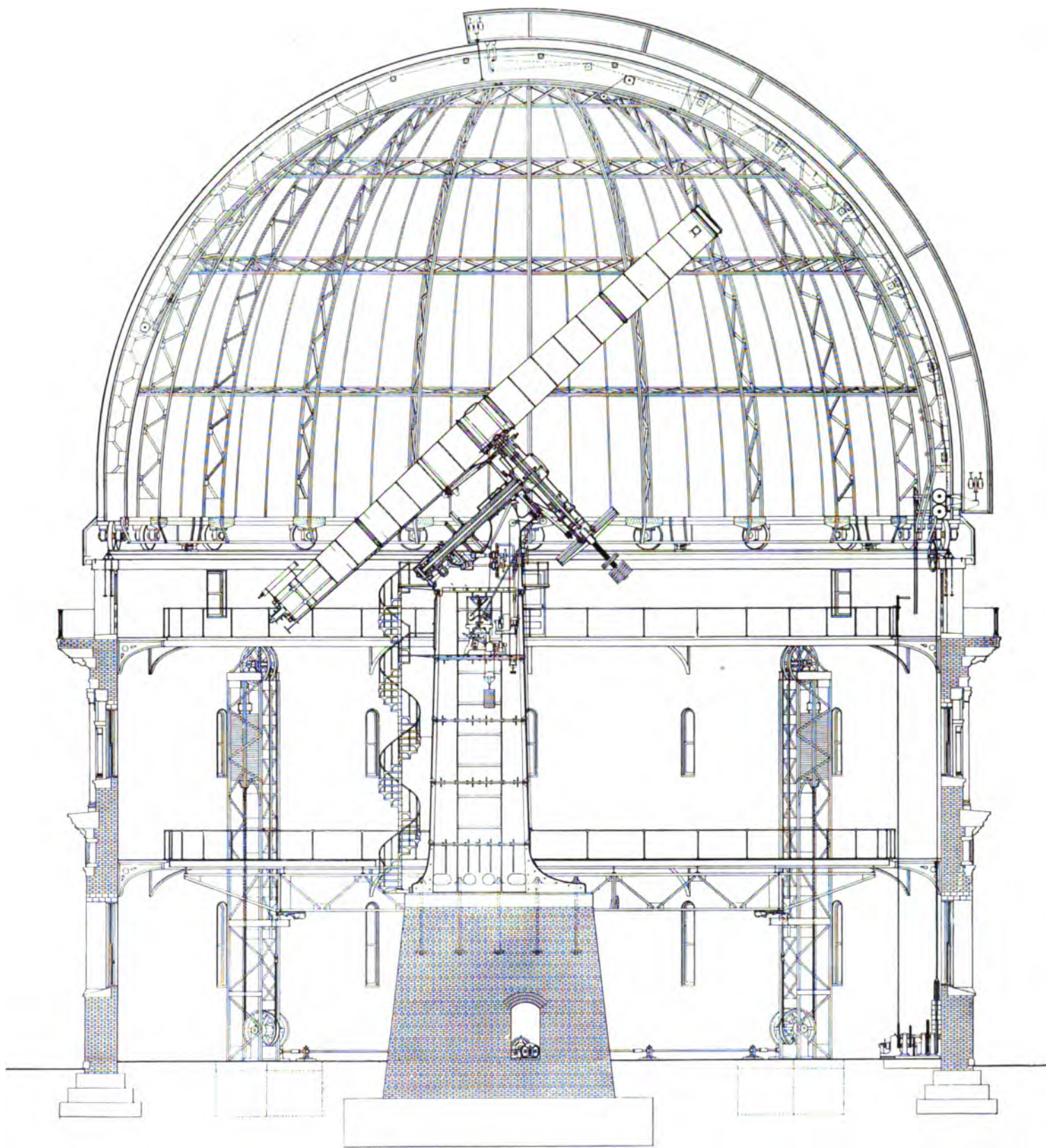
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EQUATORIAL HEAD OF THE 40-INCH YERKES TELESCOPE
VIEW FROM THE NORTHWEST

Plate XXXII

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DESIGNED AND CONSTRUCTED BY
WARNER & SWASEY
 CLEVELAND OHIO, U.S.A.
 1897

40 INCH TELESCOPE
90 FT. DOME AND 75 FT. ELEVATING FLOOR
 FOR THE YERKES OBSERVATORY